Tech.

DATA EVALUATION RECORD

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CHEM 005101

BRANCH EEB DISC ____ Fish Toxicity 96 Hr LC_{50} #30112016

FORMULATION __ - 92.9% Dry Acid

FICHE/MASTER ID _____ CONTENT CAT ____

Batchelder, T. 1974. Acute Fish Toxicity of Picloram (Dry TORDON Acid). Waste Control Department, The Dow Chemical Company, Midland, MI.

SUBST. CLASS = S

DIRECT RVW TIME = (MH) START-DATE END DATE

REVIEWED BY: M. A. Mayes, Ph.D.
TITLE: Aquatic Toxicologist
ORG: Health and Environmental Sciences
LOC/TEL: The Dow Chemical Company

SIGNATURE: Monte A Mayes DATE: 10-14-82

APPROVED BY:
TITLE:
ORG:
LOC/TEL:

SIGNATURE: DATE:

CONCLUSIONS

This study is scientifically sound. The data indicate that picloram is "moderately toxic" to the rainbow trout (LC50 of 5.5 ppm) and "slightly toxic" to the bluegill (LC50 of 14.5 ppm). This study fulfills guideline requirements for technical picloram.

DATA EVALUATION RECORD

1. CHEMICAL: Picloram (4-amino-3,5,6-trichloropicolinic acid)

2. FORMULATION: Assayed as containing 92.9% picloram (Dow Order No. F1941).

3. CITATION: Batchelder, T. 1974. Acute Fish Toxicity of Picloram (Dry TORDON Acid). Waste Control Department, The Dow Chemical Company, Midland, MI.

4. REVIEWED BY: M. A. Mayes, Ph.D.
Aquatic Toxicologist
Health and Environmental Sciences
The Dow Chemical Company

5. DATE REVIEWED: July 16, 1982

6. TEST TYPE: 96 Hr Static Acute Toxicity - Fish.

A. Test Species: Salmo gairdneri (Rainbow Trout)
Lepomis macrochirus (Bluegill)

7. REPORTED RESULTS: The 96 hr LC_{50} values and the 95% confidence limits for the rainbow trout and the bluegill are 5.5 mg/L (5.2-5.8) and 14.5 mg/L (13.7-15.3), respectively.

8. REVIEWER'S CONCLUSIONS: This study is scientifically sound. The data indicate that picloram is "moderately toxic" to the rainbow trout (LC50 of 5.5 ppm) and "slightly toxic" to the bluegill (LC50 of 14.5 ppm). This study fulfills guideline requirements for technical picloram.

MATERIALS AND METHODS:

The procedures used were those recommended by the USEPA (1972. Fish-Pesticide Acute Toxicity Test Guideline. Pesticide Regulation Division, U.S. Environmental Protection Agency). Twenty fish were used in each experimental concentration and control. Five experimental concentrations ranging from 4.2 to 6.5 mg/L were used in the rainbow trout test and eight experimental concentrations ranging from 10 to 37 mg/L were used in the bluegill test. Reconstituted water was prepared and had the following characteristics: dissolved oxygen, 7.8 mg/L; ph 7.2; alkalinity, 30 mg/L as $CaCO_3$, and hardness, 32 mg/L as $CaCO_3$. Temperature in the bluegill test was maintained at approximately 24°C ± 1°C and approximately 13°C ± 1°C in the rainbow trout test.

STATISTICAL ANALYSIS:

The data were evaluated by Finney's (1947 Probit Analysis. Cambridge University Press, London) method of probit analysis.

RESULTS:

The calculated 96 Hr LC_{50} of picloram to rainbow trout and bluegills was 5.5 (5.2-5.8) and 14.5 (13.7-15.3), respectively. The complete data sets are presented in Appendix II.

REVIEWER'S EVALUATION:

There was no indication in the methods section of the use of water or acetone controls. However, examination of the raw data indicates that a water control was used in the rainbow trout test and carrier control (6.5 ml acetone) in the bluegill test. This is a minor variance from current procedures and should not affect the validity of this study.

VALIDATION:

Classification: Core

Rationale: This study is scientifically valid and fulfills the requirement for the acute toxicity of technical picloram (acid) to fish.

Repairability: N.A.

APPENDIX I

Analysis of TORDON Acid Sample for Fish Toxicity Study

4-amino-3,5,6-trichloropicolinic acid 92.9%

[redacted]

100.0%

PICLORAM RAINSOW TROUT DAY 4

LINEAR PROBIT EQUATION:

Y= -4.2020 + 12.4630 *LOG(DOSE)

CHI-SQUARE FOR LACK OF FIT IS 13.74 WITH 3 DEGREES OF FREEDOM
CRITICAL VALUE(ALPHA = .05) IS 7.81

NUMBER OF OBSERVATIONS AT EACH DOSE IS 20

DOSE	LOG(DOSE)	% RESPONSE	OBS. PROBIT	EXP. PROBIT
4.20	0.62	0.200	4.159	3.566
4.90	0.69	0.100	3.718	4.400
5.38	0.73	0.250	4.326	4.906
5.60	0.75	0.700	5.524	5.123
6.50	0.81	0.900	6.282	5.929

LD	ESTIMATE	LOWER C.I.	UPPER C.I.
10	4.32	3.69	4.66
50	5.47	5.20	5.82
90	6.94	6.36	8.36

PICLORAM BLUEGILL DAY 4

LINEAR PROBIT EQUATION:

Y= -7.8697 + 11.0838 *LOG(DOSE)

CHI-SQUARE FOR LACK OF FIT IS 42.69 WITH 4 DEGREES OF FREEDOM
CRITICAL VALUE(ALPHA = .05) IS 9.49

NUMBER OF OBSERVATIONS AT EACH DOSE IS 20

DOSE	LOG(DOSE)	% RESPONSE	OBS. PROBIT	EXP. PROBIT
10.00	1.00	0.200	4.159	3.214
13.50	1.13	0.150	3.964	4.659
13.50	1.13	0.0	*****	4.659
15.50	1.19	0.500	5.000	5.324
15.50	1.19	0.850	6.036	5.324
16.70	1.22	1.000	*****	5.683

LD	ESTIMATE	LOWER C.I.	UPPER C.I.
10	11.11	9.08	12.15
50	14.49	13.70	15.33
90	18.91	17.29	23.10